

KYSOR/WARREN

5201 Transport Boulevard
Columbus, GA. 31907
706-568-1514



Installation & Operation Manual

HQDD6 Multi-Deck with Doors Display Case



IMPORTANT – KEEP IN STORE FOR FUTURE USE

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Introductions – General Information

This manual has been prepared for our customers and the personnel involved in setting up and maintaining our cases.

The HQDD6 offers you a medium temperature, multi-deck case with reach in door energy savings - **60% savings** over comparable open multi-deck cases! Your multi-deck case with standard 48" length shelves - **fits your current merchandise plans!** The HQDD6 also offers you a clear **48" wide door opening** with a constant door size on the 4', 8' and 12' foot cases. All of this without sacrificing the versatility of a standard multi-deck case for bakery, produce, cheese, deli items, dairy, drinks and ready to go meals.

These cases should be installed and operated according to the instructions contained in this manual to insure proper performance. They are designed for display of products in an air-conditioned store where temperature and humidity are maintained at a **maximum of 75° dry-bulb temperatures and 55% relative humidity.**

The HQDD6 will accommodate up to 5 levels of product display shelving in addition to the deck pan level. These levels provide excellent visibility and accessibility to the displayed products. These cases offers exceptional display facing area and product pack-out in a case that is only 80" in height. The shelving is available in 18", 20", 22" and 24" shelf depths.



CAUTION: Failure to maintain maximum design conditions may result in operational issues such as: increased BTUH load, high product temperature, coil icing, product frosting, and external sweating.

ICON KEY	
	CAUTION
	SPECIAL NOTE
	WARNING

Case Description

Model	Description
HQDD6	Multi-Deck with doors; medium temperature. Available in 4', 8' and 12' sizes with shelving depth options of 18", 20", 22" and 24".

Receiving/Shipping Damage/Lost Items

All equipment should be examined for shipping damage before and during unloading. If there is any damage, the carrier should be notified immediately and an inspection requested. The delivery receipt must be **NOTED** that the equipment was received damaged. If damage is of a concealed nature, you must contact the carrier within three (3) days following delivery. The consignee for all damages must file a claim with the carrier.



NOTE: All claims for shortages must be within 10 days after receipt of shipment.

Refrigerant

A variety of refrigerants can be used in the Kysor//Warren cases provided the correct expansion valve is equipped with the case when ordered (i.e., R-404 required for the end user requires specifying the correct expansion valve for R-404 refrigerant when the order is placed). Multiple expansion valves are available, depending on end user refrigerant requirements. Expansion valves are supplied for the refrigerant specified on the original sales order.

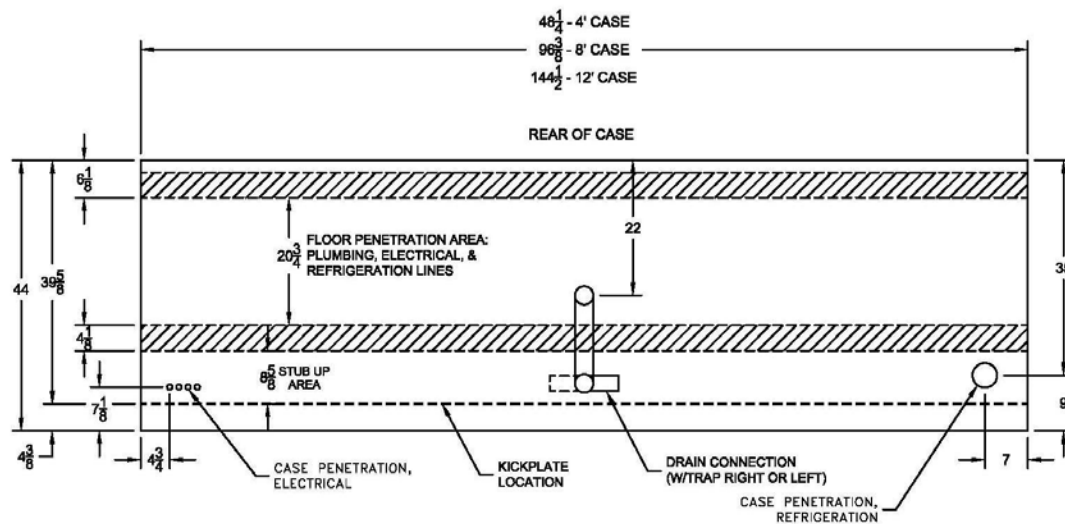
In addition, cases can be modified in the field to allow changing the type of refrigerant used. This requires changing the expansion valve and distributor orifice that is currently equipped in the case. Contact your Kysor//Warren Service Representative for additional information.



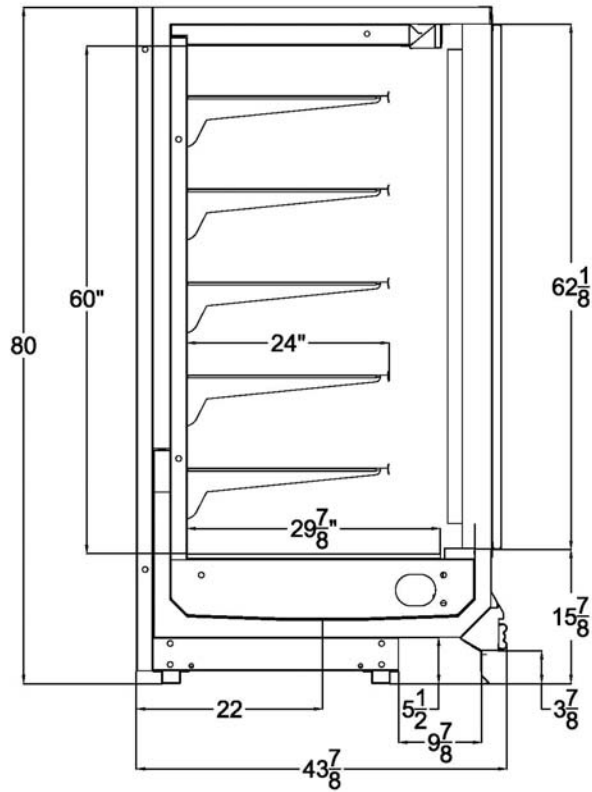
NOTE: Refer to Case Data Control Settings for refrigeration requirements.

HQDD6 Plan View and Cross Section

Plan View



Cross Section



Case Data

HQDD6

CASE DATA AMPS	4'	8'	12'
Anti-sweat	0.61	1.22	1.82
PSC Fan / # Fans	0.26/1	0.52/2	0.78/3
ECM Fan / # Fans	0.25/1	0.50/2	0.75/3
T8 Lights (option)	0.56	1.44	1.82
LED Lights (Gelcore)	0.28	0.53	0.82
Electrical data determined using unlighted shelves at 115V.			

DEFROST CONTROLS			
Defrost	Per Day	Fail Safe	Termination
Off Cycle	1	40 min	45°F
Hot Gas	1	20 min	45°F

CAPACITIES			
	4'	8'	12'
Facing Area	20.1 ft ²	40.2 ft ²	60.3 ft ²
Cubic Capacity	50.3 ft ³	100.4 ft ³	150.5 ft ³

Evap Temp	Discharge Air Velocity	Discharge Air Temp
	(After 1 hr. Defrost)	
30°F	225 FPM	34°F

BTUH per FT of Case with LED Lights	
PSC Fan	284
ECM Fan	264
BTUH per FT of Case with T8 Lights	
PSC Fan	318
ECM Fan	298



NOTE:

- For sizing conventional/individual condensing units, add 8% to BTUH load.
- Where termination temperatures are given, mechanical defrost termination is required.

Maximum Shelving Size Recommended:

Not to exceed 24"



NOTE: The air current is very important to the performance of this case. The load limit line (see load case section) is the indicator of the inside edge of the air current and at no time should shelving, product, signs, debris, etc., interfere with air current.



NOTE: Temperature is measured in discharge air. Defrost frequency is at design conditions. Higher temperature or humidity may require more defrost and longer fail-safes. These cases are not designed to operate in environments where the ambient temperature is greater than 75°F and the relative humidity is greater than 55%. Off-cycle defrost is the recommended defrost for these cases. Hot gas defrost is available for installations requiring a positive defrost. Refer to www.kysorwarren.com for other electrical data and information.



CAUTION: Failure to maintain maximum design conditions may result in operational issues such as: increased BTUH load, high product temperature, coil icing, product frosting, and external sweating.



CAUTION: Failure to properly install electrical wiring and control wiring as per wiring diagram(s), defrost settings, and temperature set-points may result in operational issues such as: increased BTUH load, high product temperature, coil icing, product frosting, and external sweating.

Case Installation

These display cases may be installed individually or in a continuous line up consisting of several 4', 8' and 12' sections using a joint kit. A plexi-glass divider kit must be used between cases operating on different refrigeration systems. The divider will be factory installed if specified on order.

Preparation

1. Prepare the installation area as follows:
2. Clean area where case is to be installed.
3. Verify installation area is at least 15 feet from any outside entrances or heating and cooling outlets.
4. Verify at least 2 feet of distance between hot and cold cases.
5. Ensure floor loading will support the case and the case contents.

6. Ensure proper AC power is available. Refer to case AC input requirements located in the electrical connections section of this manual.
7. Ensure location will allow connection to drain lines and the drain line, when installed, will meet the recommendations as set forth in the refrigeration piping and dehydration section of this manual.
8. Ensure expansion valve in case is the proper valve for the type of refrigerant used at the installation site.



CAUTION: To prevent condensation on the end panels of cases, a minimum of 6.0 inches between walls or other cases is required for airflow. If 6.0 inches is not possible, then the space between the cases must be completely filled and sealed or an updraft fan kit must be installed to provide air circulation through the space.

Installation

The following instructions are provided for unpacking, moving, loading, and lifting the case prior to installation.



NOTE: READ ALL INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION

Unpacking



WARNING: Use caution when removing the strapping in the following procedure, as the shelves are very heavy and could fall causing personal injury or equipment damage.

1. Remove all shipping tape from lamps and ensure that all lamp ends are snapped in place.
2. Ensure the evaporator cover is installed correctly with the deck pans installed.
3. Move the case into position, install, adjust superheat, and perform the operational checkout procedures following the instructions within this manual.



CAUTION: Be careful not to damage the factory-installed end while moving the case. Use the case lift points on the case to move it to the proper location.

Installing First Case

1. Ensure all preparation for installation, as outlined in the above paragraphs, have been fully complied with and are complete.
2. If multiple cases are to be installed, find the highest area of the floor to place the first case.
3. Allow a minimum of 6 inches between the rear of the case and the store walls and/or other cases. This space reduces the possibility of condensation problems. It may be necessary to provide forced air ventilation in some installations.
4. All cases must be located on a firmly based floor and be leveled within plus or minus 1/16 inch.
5. Use shims provided to support and level the entire length of your case(s). All rails of the case must be properly shimmed and be in contact with the floor. Cases with shims on the ends must also have shims in the middle and be no more than 4 ft. apart. All legs of the case must be properly adjusted and be in contact with the floor.
6. If multiple cases are to be installed, refer to the floor plan and install the first case in the line up by snapping a chalk line where the front and rear of the cases are to be located.
7. Continue the chalk line if multiple cases are to be installed. The first case is typically the case that is at the highest area on the floor.
8. Connect water drain line. Reference waste outlet (drip pipe) description and location procedure later in this chapter.
9. Connect input AC power. Reference electrical installation procedure later in this manual
10. Connect refrigerant lines. Reference procedure later in this manual
11. Install all ends, caps, and trim per the applicable instructions contained in this manual.
12. Remove shipping tape on fluorescent lamps and remove all other shipping material.
13. Refer to the operational start up procedures later in this manual. If multiple cases are to be installed, refer to the following paragraph for installing subsequent cases.

CASES MUST BE LEVELED FROM FRONT TO BACK END-TO-END AND SUPPORTED CONTINUOUSLY AS NEEDED WITH SHIMS.

Installing Subsequent Cases

If additional cases are to be installed, follow the same procedures as described in the installing first case procedure (above), in addition to the following:

1. Move cases as near their permanent location as possible before removing shipping braces, skids or rollers.



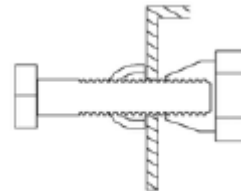
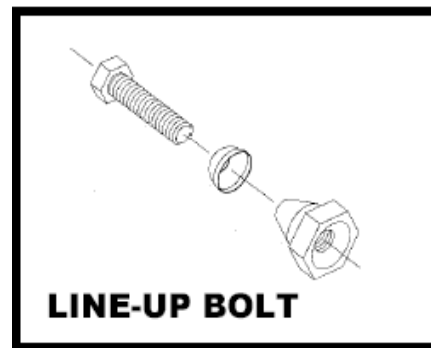
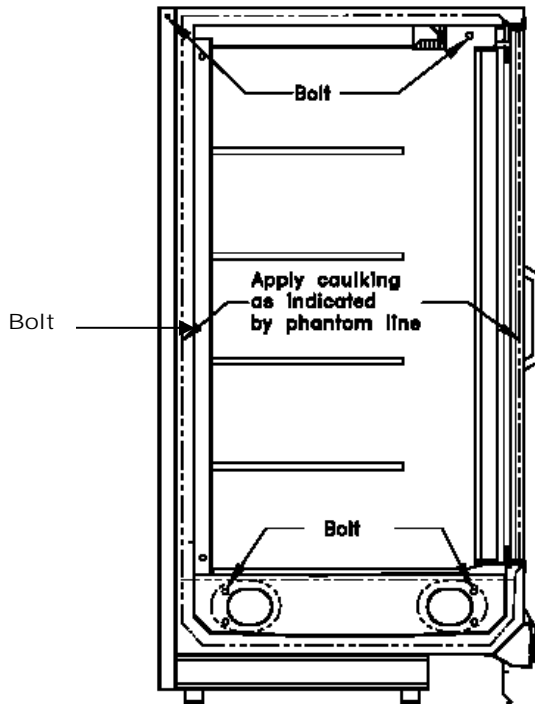
NOTE: All cases are factory numbered with line up and position numbers. Make sure that cases are installed in order (line up sticker found on the fan plenum or door and on the back panel of the case).

2. Remove skids and shipping braces.
3. Ensure all case expansion valves are correct.
4. Do not install electrical, drain lines, or refrigerant lines until all the cases have been set/placed into position and properly leveled.
5. Do not install case trim, ends, or caps until all cases have been set into position and properly positioned and leveled.
6. Before lining up cases using the front and rear edges as a baseline, inspect refrigeration lines, electrical connections and controls to insure cases are in proper line up and are in proper sequence.
7. Remove shipping tape on fluorescent lamps and remove all other shipping material. Follow all joining instructions listed below to connect cases in a line-up.

Joining Instructions

Two or more cases of like models can be joined together to form a continuous line up. Before lining up cases, inspect refrigeration lines, electrical connections and controls to insure cases are in the proper line-up and are in the proper sequence. Reference and become familiar with the below figure, and then join the cases using the instructions that follow.

Line Up Bolt Holes on Side of Cases – See Caulking Diagram Below



1. A plexi-glass divider and EPR valve must be used when joining a Q-series case with a non-Q-series case.
2. Apply foam insulation tape and caulking around the side of the case as shown in the diagram above.
3. Remove access covers over line up holes and insert the small line up bolts (see previous diagram) in the end frame in the bolt hole pattern. Place the special T-nut washer on the 3/8" machine bolt with the hollow section away from the bolt head. Tighten the 3/8" bolts with nut washer into the T-nuts alternately until cases are pulled up tight and the joint is completely sealed. (Reasonable care should be exercised in this procedure to prevent end frame distortion.) Assist pulling case up tight by bumping from opposite end of case or by using pry bar.
4. Inspect joint for proper air and watertight seal inside and outside the case.
5. Replace line up access cover plugs and plates.

6. Move cases as close together as possible and level by using the shims provided (same as original case). Use shelf standard struts for alignment to be sure cases are level.



Shelf standards on back wall should be even when leveled properly.

CASES MUST BE LEVELED FROM FRONT TO BACK AND END-TO-END AND SUPPORTED CONTINUOUSLY AS NEEDED WITH SHIMS.

Waste Outlet (Drip Pipe) Description and Location

These cases are equipped with 1 ½" M-NPT waste outlet connection that terminates in the center of the refrigerator below the insulated bottom. The water seal trap is shipped loose for field installation.



NOTE: *Improperly installed drip pipes can seriously effect the operation of this case and result in increased maintenance cost. Listed below are some general rules for drip pipe installation:*

- *Never use a double water seal.*
- *Never use a pipe smaller than the size pipe or water seal supplied with the case.*
- *Always provide as much fall as possible in drip pipe. (1" fall for each 4' of drip pipe.)*
- *Avoid long runs in drip pipe, which make it impossible to provide maximum fall in pipe.*
- *Provide a drip space between drip pipe and floor drain or sewer connection.*

Do not allow drip pipe to come in contact with un-insulated suction lines, which will cause the condensation from your case to freeze.

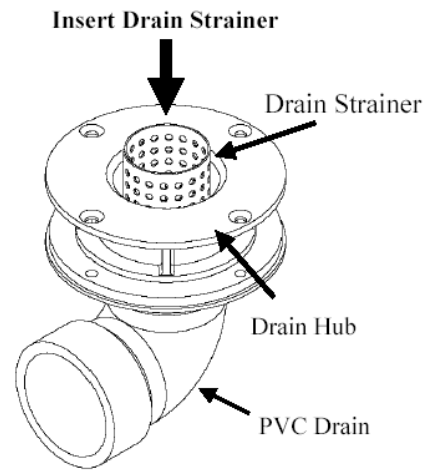
Drain Strainer



NOTE: Not all of our cases have drain strainers. This information applies only to the cases equipped with the strainers.

•**Purpose:** Keep debris or any foreign objects from entering the PVC drain, which could cause blockage.

•**Installation:** Insert into drain until drain strainer stops – it will not be flush. Strainer will exceed hub by 1". DO NOT flatten drain strainer,



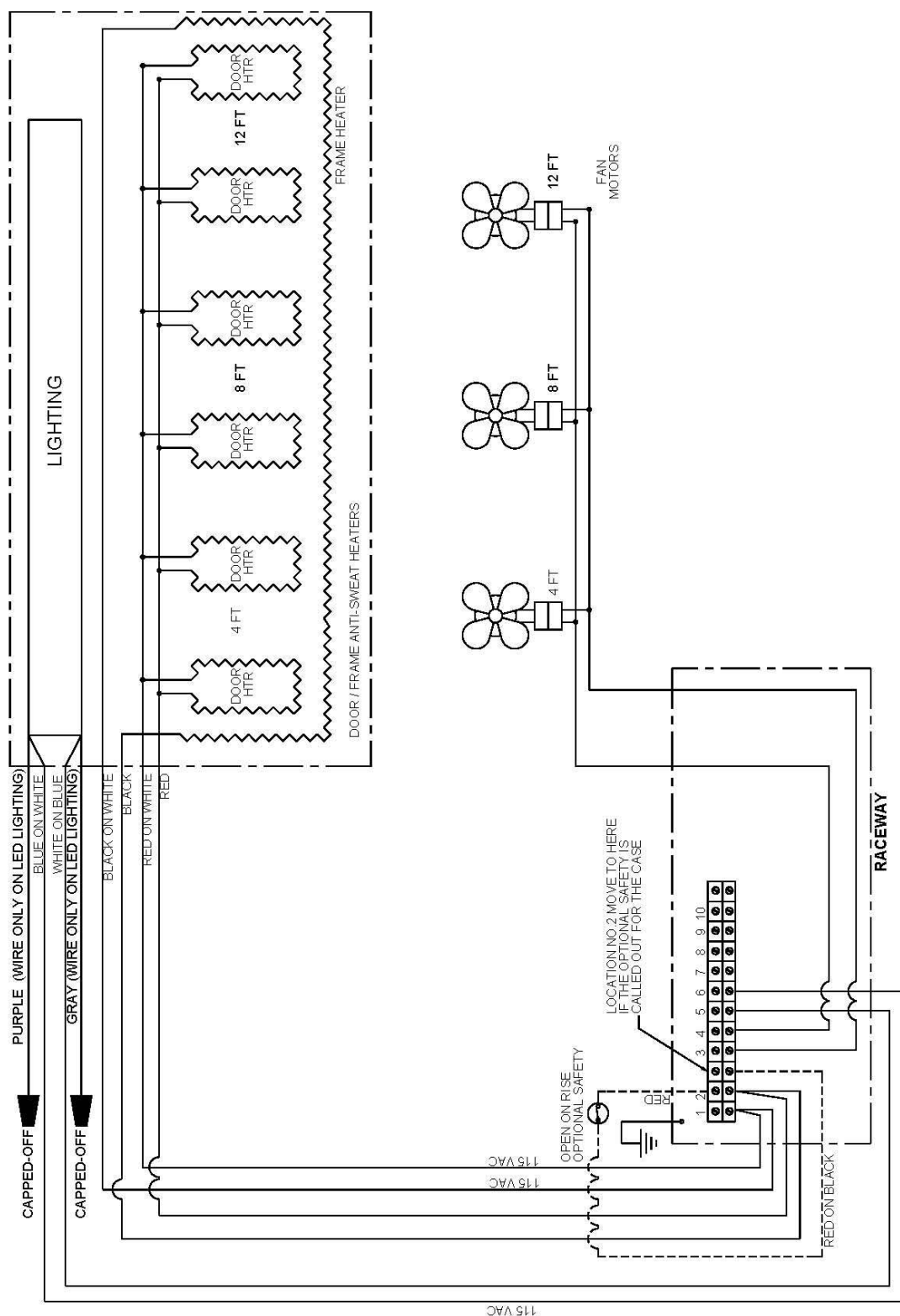
NOTE: 1 1/2" Drain Pipe

Electrical Connections – General

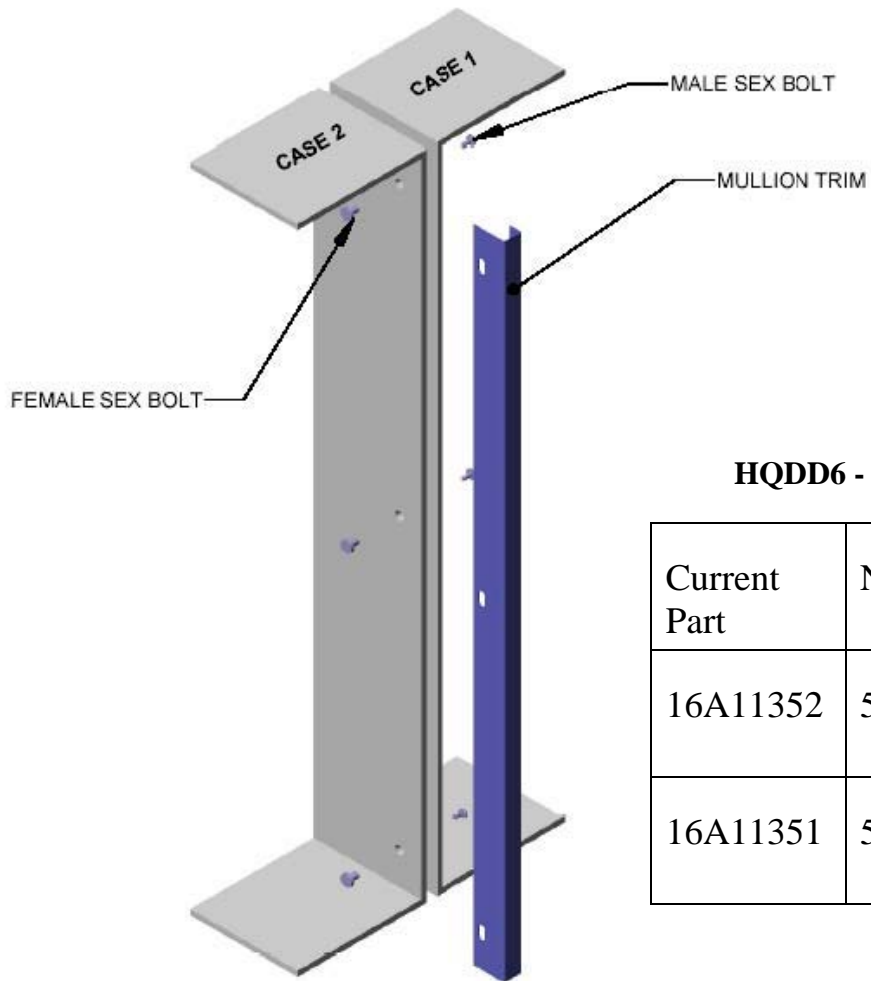


CAUTION: Failure to properly install electrical wiring and control wiring as per wiring diagram(s), defrost settings, and temperature set-points may result in operational issues such as: increased BTU load, high product temperature, coil icing, product frosting, and external sweating.

OFF CYCLE DEFROST AND HOT GAS DEFROST



DOOR MULLION ASSEMBLY



HQDD6 - Mullion Joint Trim

Current Part	New Part	Description
16A11352	54E18147	Mullion Joint Black
16A11351	55P18602	Mullion Joint Silver



WARNING! Ensure the Kickplate does not come in contact with the case electrical wiring. Live electrical wiring that comes in contact with the case is a shock hazard that may cause severe injury or death by electrocution.



WARNING! Always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as fans, heaters, thermostats and light bulbs. Failure to disconnect the electrical power may result in personal injury or death.

The wires are clearly identified for termination purposes as follows:

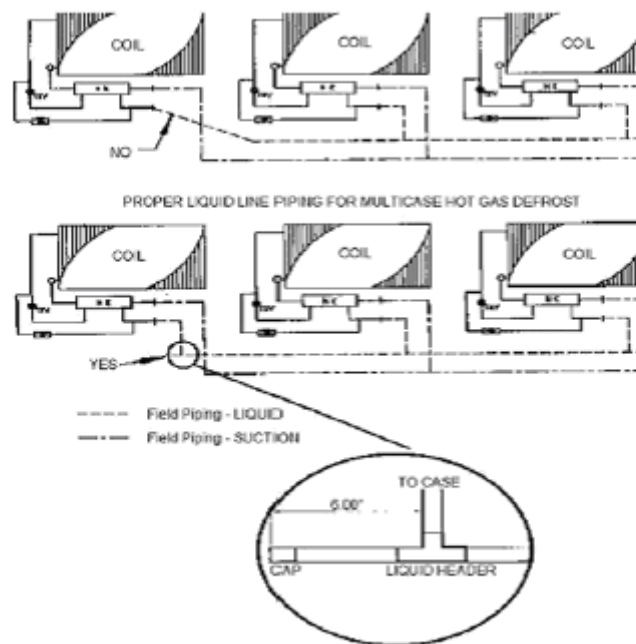
Component	Wire Number
Anti-Sweat Heater	1 and 2
Refrigerator Fan Motors and Drain Heater	3 and 4
Lighting Circuit	5 and 6
Defrost Heaters	7 and 8
Temperature Control	9 and 10
Dual Temperature	15 and 16
Defrost Termination Control	17 and 18

Refrigeration Piping and Dehydration

Opening a Ferrule Hole

The refrigeration lines are located under the deck pans. A refrigeration outlet is provided in the front right hand end of the cases. All refrigeration lines need to be as close to the drain pan as possible so as not to obstruct the air pattern or block the deck pans.

Recommended Piping Instructions



1. Proper size refrigeration lines are essential to good refrigeration performance. Suction lines are more critical than liquid or discharge lines. Oversized suction lines may prevent good oil return to the compressor. Undersized lines can rob refrigeration capacity and increase operating cost. Consult the technical manual or legend sheet for proper line sizes.
2. Refrigeration lines in cases in line-ups can be reduced. However, the lines should be no smaller than the main trunk lines in at least 1/3 of the cases and no smaller than one size above the case lines to the last case. Reductions should not exceed one line size per case. It is preferred to bring the main trunk lines in at the center of line-up. Liquid lines on systems on hot gas defrost must be increased one line size above the main trunk line for the entire line-up. Individual feed lines should be at the bottom of the liquid header. (See proper liquid line piping diagram.)
3. Do not run refrigeration lines from one system through cases on another system.

4. Use dry nitrogen in lines during brazing to prevent scaling and oxidation.
5. Insulate suction lines from the cases to the compressor with 3/4" wall thickness foam on low temperature cases to provide maximum of 65-degree super heated gas back to the compressor and prevent condensation in exposed areas. Insulate suction lines on medium temperature cases with 1/2" thick insulation in exposed areas to prevent condensate drop-off.
6. Suction and liquid lines should never be taped or soldered together. Adequate heat exchanger is provided in the case. Kysor/Warren recommends use of heat exchanger in all medium and low temperature case that are not mechanically sub-cooled for proper operation.
7. Refrigeration lines should never be placed in the ground unless they are protected against moisture and electrolysis attack.
8. Always slope suction lines down toward the compressor, 2" each 10'. Do not leave dips in the line that would trap oil.
9. Provide P traps at the bottom of suction line risers, 4' or longer. Use a double P trap for each 20' of risers. P traps should be the same size as the horizontal line. Consult the technical manual or legend sheet for proper size risers.
10. Use long radius ells and avoid 45 degree ells.
11. Provide expansion loops in suction lines on systems on hot gas defrost. An expansion loop is required for each 100' of straight run.
12. Strap and support tubing to prevent excessive line vibration and noise.
13. Brazing of copper to copper should be with a minimum of 10% silver. Copper to brass or copper to steel should be with 45% silver.
14. Do not use bullhead tees in suction lines. An example is where suction gas enters both ends of the tee and exits the center. This can cause a substantial increase in pressure drop in the suction lines.
15. When connecting more than one suction line to a main trunk line, connect each branch with an inverted trap.

Suction line:

- a. Pitch in direction of flow.
- b. Suction lines should enter at the top of the branch line.
- c. May be reduced by one size at one third of case run load and after the second third. DO NOT reduce below the case suction line size.

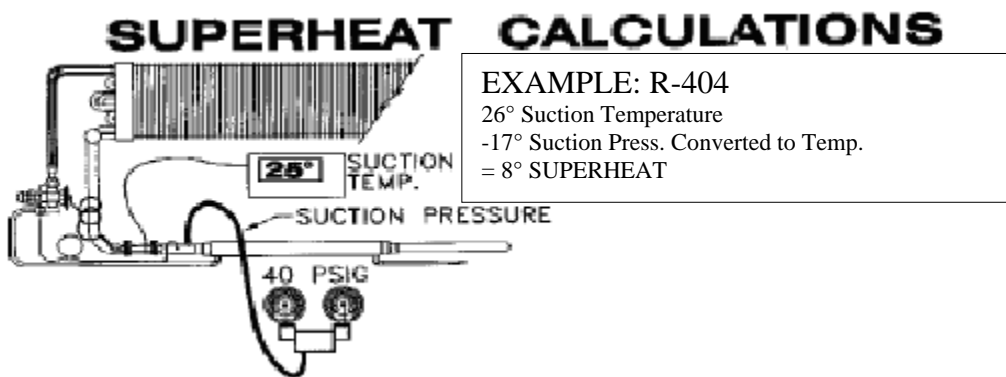
Expansion Valve and Superheat



CAUTION: During service of this equipment, precautions should be taken to prevent loss of refrigerant to the atmosphere. Always install the expansion valve stem cap after making valve adjustments.

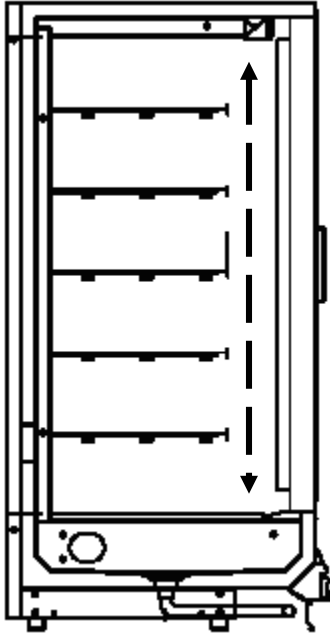
The expansion valve furnished with your case has been sized for maximum coil efficiency. To adjust superheat, perform the following:

1. Place a thermocouple near the expansion valve bulb. Read the suction line pressure as near coil as possible. (If at the condensing case, estimate suction line loss at 2 PSIG).
2. Convert coil suction pressure to temperature. The difference between coil temperature and the thermocouple temperature is superheat. (Use average superheat when expansion valve is hunting).
3. Do not set superheat until cases have pulled down to operating temperature and never open or close the valve over $\frac{1}{4}$ turn between adjustments and allow 10 minutes or more between adjustments.
4. Superheat should be set to 6-8°F.
5. After the initial setting, the superheat should be rechecked when product is stocked and at designed temperature.



Operation

Loading



Merchandise should not be placed in the fixture until all controls have been adjusted and the case is at the proper temperature. **AT NO TIME SHOULD THE CASE BE STOCKED BEYOND THE LOAD LINE OR OVER THE FRONT EDGE OF ADJUSTABLE SHELVES.** Air discharge and return flues must remain open and free of debris or obstruction at all times to provide proper refrigeration and air current performance. Do not allow any product, signs, debris, etc. to block these grilles. Do not use any non-approved shelving, display racks or any accessory that could hamper air current performance.



WARNING! Do not walk on top of the cases! This could result in damage to the case and serious personal injury could occur. These cases are not designed to support excessive external weight. Do not use top of cases for storage.

Normal Operation

1. Off-Cycle Defrost is standard on these models. The fans run continuously and defrost termination is by termination Klixon.
2. Electric Defrost Models are optional. Electric heaters are utilized to melt the frost and ice on the coil. The heaters are located in the air stream in front of the coil. The defrost cycle is time initiated and should be temperature terminated. Case fans operate continuously in defrost and refrigeration. As a safety precaution, a safety cutoff Klixon is wired in series with the defrost heater to turn the heater off at temperatures above 70°F.
3. Hot Gas Defrost Models (optional for parallel compressor operation only) hot gas is routed through the suction line and evaporator coil. It exits the coil through a by-pass around the expansion valve and heat exchanger to return to the liquid line where the condensed liquid is used to feed the other cases on the same parallel case. The case fans continue to operate during

defrost to warm up the drain pan and air ducts. The defrost cycle is time initiated and should be temperature terminated. (See case data information)

4. Single Condensing Case Systems – A thermostat should be used to control case temperatures. The thermostat bulb should be mounted in the discharge air (see case data if your case is a single condensing case system).



NOTE: Where termination temperatures are given, mechanical defrost termination is required.

Cleaning

As a general rule, always use mild soap and water to wipe the case down. Special precautions must be taken when cleaning some components of the case.

Exterior surfaces should be cleaned with warm water and mild soap to protect and maintain the finish. **Do not use cleaners containing abrasive materials or ammonia, which will scratch or dull the finish.** The waste outlet should be flushed with water following each cleaning.

Interior surfaces may be cleaned with most mild soap formulas, ammonia based cleaners and sanitizing solutions with no harm to the surface.



WARNING! Always shut power off during the cleaning process. Cleaning the case with electrical power applied is a shock hazard that may cause serious injury or death.



WARNING! DO NOT USE HOT water on COLD glass surfaces. This could cause the glass to shatter and could result in personal injury. Glass fronts and ends should be warm before applying hot water.



CAUTION: The following could damage the case:

- Do not use solvent, oil or acidic-based cleaners on any interior surfaces as the surface may become damaged.
- Do not use abrasive cleaners and scouring pads, as these will mar the finish.
- Never introduce water into the case faster than the waste outlet can release it.

- DO NOT USE STEAM OR HIGH PRESSURE SYSTEMS TO CLEAN THE CASE AS SEALS MAY BE BROKEN WHICH WILL CAUSE THE CASE TO LEAK.

Shelves

Do not use a hose or submerge shelves in water. When cleaning lighted shelves; wipe down the shelves with a wet sponge or cloth so that water does not enter the light rails.

Mirrors

Mirrors are sheets of clear glass that have a very thin reflective coating applied to one side. These coatings are susceptible to deterioration if certain cleaning solutions and even water are allowed to come in contact with them. Every precaution should be made to keep liquids away from the coated side of the mirrors. If liquids are allowed to flow along the face side of the mirror to its edge, the liquid can seep between the coating and the glass, causing serious damage.

To help prolong the life of the mirrors:

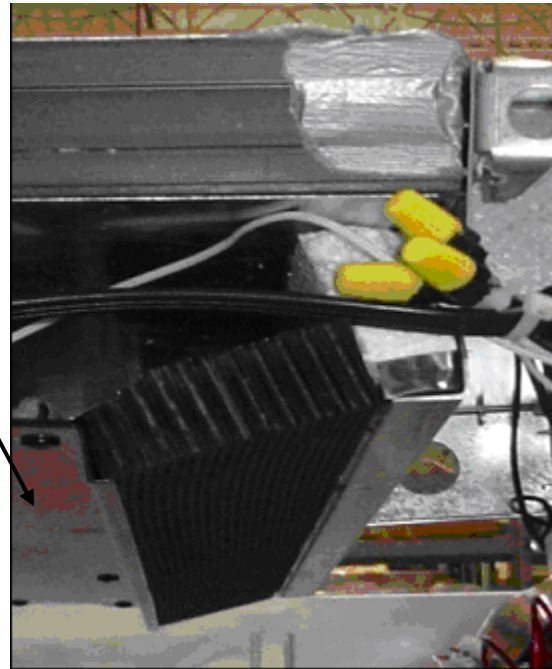
- Use only mild cleaning solutions (Windex, Solox, or a weak solution of vinegar and water.)
- Do NOT spray liquids on mirrors. Dampen the cleaning cloth, and then use the cloth to wipe the mirror.
- Wipe water from the mirrors immediately to prevent difficult to remove water spots and also to prevent the water from reaching the mirrors edge.
- Never use dirty cloths, scrapers or any other abrasive materials for cleaning.

Honeycomb Assembly

The honeycomb should be cleaned every 6-8 months, depending on store conditions. The honeycomb may be cleaned with a vacuum cleaner or removed to be washed with soap and water. The honeycomb must be completely dry before returning it to the case.

To remove honeycomb from case,
take out screws located here.

Note the position and angle of the
honeycomb when removing from the
case. Honeycomb must be replaced at
the same angle.



HQDD6 Parts List

Description	Part No.	Quantity		
		4 ft	8 ft	12 ft
Fan Motor PSC	09A10102	1	2	3
Fan Motor ECM	09A10107	1	2	3
Fan Blade 31 Dg 8” Diameter	09B10043	1	2	3
Honeycomb-White	13A15145	1	2	3
Honeycomb - Black	13A15146	1	2	3
Fan Bracket PSC / ECM	54V11870	1	2	3
Deck Pan PTD	54N18604	2	4	6
Deck Pan BRT	55M16178	2	4	6
External Drain Trap	96H41573	1	1	1



NOTE: Standard parts are provided in the parts lists. Cases may be equipped with specialty parts that were incorporated into the case(s) at the time they were manufactured. It is important to have the case serial number when contacting Kysor//Warren for replacement parts.

Warranty

Rev. 4.1.2009 DNS

DIVISION OF KYSOR INDUSTRIAL CORPORATION 5201 Transport Boulevard
Columbus, Georgia 31907 706-568-1514

ONE-YEAR WARRANTY

KYSOR//WARREN warrants to the original purchaser this new equipment and all parts thereof, to be free from defects in material and workmanship under normal use and service. If any part or parts of the equipment should prove defective during the period of one year from installation date (not to exceed one year and thirty days from the date of original shipment from the factory), **KYSOR//WARREN** hereby guarantees to replace or repair, without charge (F.O.B. Columbus, Georgia), such part or parts as proven defective, and which **KYSOR//WARREN'S** examination disclosed to its satisfaction to be thus defective, with a new or functionally operative part. The liability of **KYSOR//WARREN** under this warranty shall be limited to claims made by the original purchaser to **KYSOR//WARREN** or **KYSOR//WARREN'S** authorized dealer or distributor within the warranty period.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS, AND ALL OTHER OBLIGATIONS OR LIABILITIES OF KYSOR//WARREN.

I. GLAZING: Glass is not guaranteed against breakage. If this refrigerator is equipped with a glazing assembly carrying the manufacturer's brand name (Thermopane, Twindow, etc.), the manufacturer's glazing warranty in effect at the time of this shipment is extended to that assembly.

II. BULBS: Light bulbs and fluorescent lamp tubes are not covered by any warranty for length of life or for any type of breakage.

III. THIS WARRANTY SHALL NOT APPLY:

1. To the condensing unit used with refrigerated equipment unless same was sold and shipped by **KYSOR//WARREN**.
2. When this equipment or any part thereof is damaged by accident, fire, flood, act of God, alteration, abuse, misuse, tampering, when the original model and serial number plate has been altered, defaced, or removed or used other than the recommended application by **KYSOR//WARREN**.
3. When this equipment or any part thereof is subject to operation on low, high or improper voltages. Low and high voltage is defined as more than a 5% drop below or 10% higher than name plate voltage ratings. **NOTE: Proper field supply voltage to the equipment is the responsibility of the owner (end user).**
4. To damage caused by overloading shelves or wire racks beyond the specified

weight limits. The maximum weight limit for standard KYSOR//WARREN shelves and wire racks is 30lbs per square foot.

5. When this equipment or any part thereof is damaged, or when operation is impaired, due to failure to follow installation manual
6. NOTE: Proper installation is the responsibility of the installer, owner (end user).
7. Operational issues caused by ambient environmental conditions outside of the specified limits. All KYSOR//WARREN equipment is specified to operate in a conditioned ambient environment not to exceed 75 degrees Fahrenheit or 55% relative humidity. NOTE: Providing specified ambient environmental conditions are the responsibility of the owner (end user).
8. To equipment with final destinations unknown to KYSOR//WARREN as indicated on the original sales order.
9. To labor cost for repair or replacement of parts.
10. To special or expedited freight or shipping charges or to customs duties to any country.
11. If the Warranty holder fails to comply with all the provisions, terms and conditions of this Warranty.

Parts replaced under this Warranty are warranted only through the remainder of the original Warranty. KYSOR//WARREN may, at its option and in its discretion, elect to honor this Warranty and to disregard the original purchaser's non-compliance with any of the provisions, terms and conditions of the Warranty.

THIS WARRANTY DOES NOT COVER CONSEQUENTIAL DAMAGES.

KYSOR//WARREN shall not be liable under any circumstances for any consequential damages, including loss of profits, additional labor costs, loss of refrigerant or food products, or injury to person or property caused by defective material or parts or for any delay in the performance of this Warranty due to causes beyond its control. The foregoing shall constitute the sole and exclusive remedy of any purchase and the sole and exclusive liability of KYSOR//WARREN in connection with this product.

NOTE: IN THE CONSTANT EFFORT TO IMPROVE OUR PRODUCTS, WE RESERVE THE RIGHT TO CHANGE AT ANY TIME SPECIFICATIONS, DESIGN, OR PRICES WITHOUT INCURRING OBLIGATION.

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Kysor//Warren, whose policy is one of continuous improvement, reserves the right to change at anytime, these specifications, designs or prices without incurring obligation.

KYSOR/**WARREN**

